291

8_6 HW Key p451

Without writing the equation in standard form, state whether the graph of each equation is a *parabola, circle, ellipse,* or *hyperbola.*

33. $x^2 + y^2 - 8x - 6y + 5 = 0$

34. $3x^2 - 2y^2 + 32y - 134 = 0$

35. $y^2 + 18y - 2x = -84$

36. $7x^2 - 28x + 4y^2 + 8y = -4$

37. $5x^2 + 6x - 4y^2 - y^2 - 2x$ $\quad 4x^2 + 4y^2$

38. $2x^2 + 12x + 18 - y^2 = 3(2 - y^2) + 4y$ $\quad 6 - 3y^2$ $\quad 2x^2 + 2y^2$

Write each equation in standard form. State whether the graph of the equation is a *parabola, circle, ellipse,* or *hyperbola.* Then graph the equation.

13. $4x^2 + 2y^2 = 8$

14. $x^2 = 8y$

20. $x^2 + y^2 + 6y + 13 = 40$

21. $x^2 - y^2 + 8x = 16$

33. circle 34. hyperbola 35. parabola

36. ellipse 37. ellipse 38. circle

13. $4x^2 + 2y^2 = 8$ ellipse

$\frac{x^2}{2} + \frac{y^2}{4} = 1$

$C(0,0)$

$a = 2$

$b = \sqrt{2}$ $\quad 4 = 2 + c^2$

$c = \sqrt{2}$

$V(0, \pm 2)$

$F(0, \pm\sqrt{2})$

14. $y = \frac{1}{8}x^2$ parabola

$V(0,0)$ $\quad$ a o s $x = 0$

$\frac{1}{4a} = \frac{1}{8}$ $\quad \frac{1}{4(\frac{1}{8})} = \frac{1}{\frac{1}{2}} = 2$

$F(0,2)$

directrix: $y = -2$

$LR = \frac{1}{\frac{1}{8}} = 8$

$L(4,2)$ $\quad R(-4,2)$

20. $x^2 + y^2 + 6y = 40 - 13$ Circle

$x^2 + (y^2 + 6y + 9) = 40 - 13 + 9$

$x^2 + (y+3)^2 = 36$

$C(0, -3)$

$r = 6$

21. $x^2 + 8x - y^2 = 16$ hyperbola

$(x^2 + 8x + 16) - y^2 = 16 + 16$

$(x+4)^2 - y^2 = 32$

$\frac{(x+4)^2}{32} - \frac{y^2}{32} = 1$

$C(-4, 0)$

$a = 4\sqrt{2}$

$b = 4\sqrt{2}$

$c = 8$

$32 + 32 = c^2$

$8 = c$

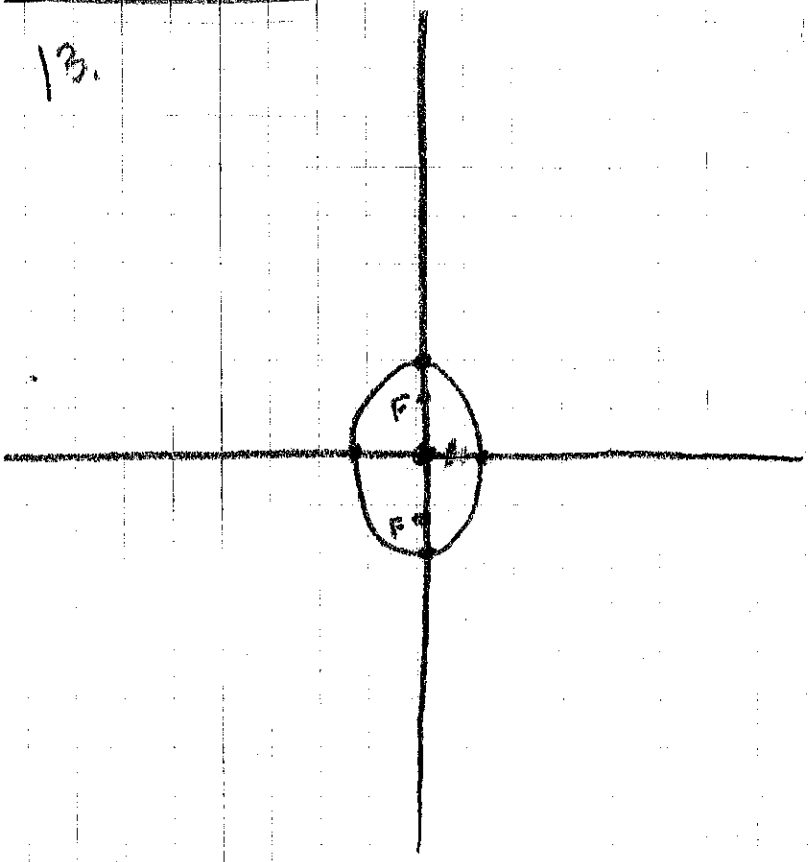
$V(-4 \pm 4\sqrt{2}, 0)$

$F(4, 0)(-12, 0)$

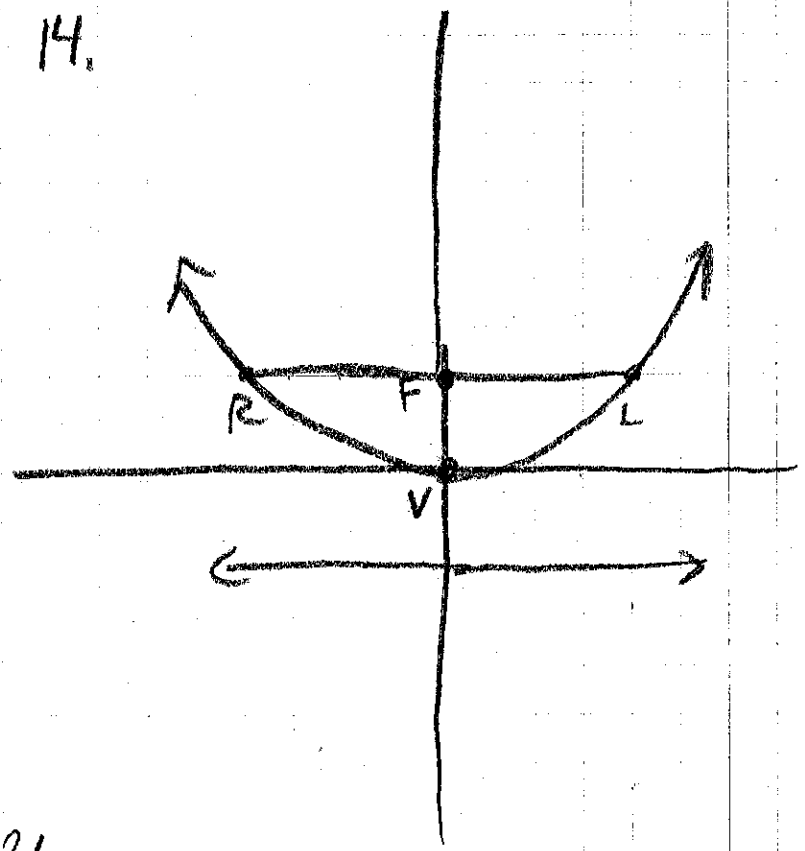
Asymptotes

$y = \pm (x + 4)$

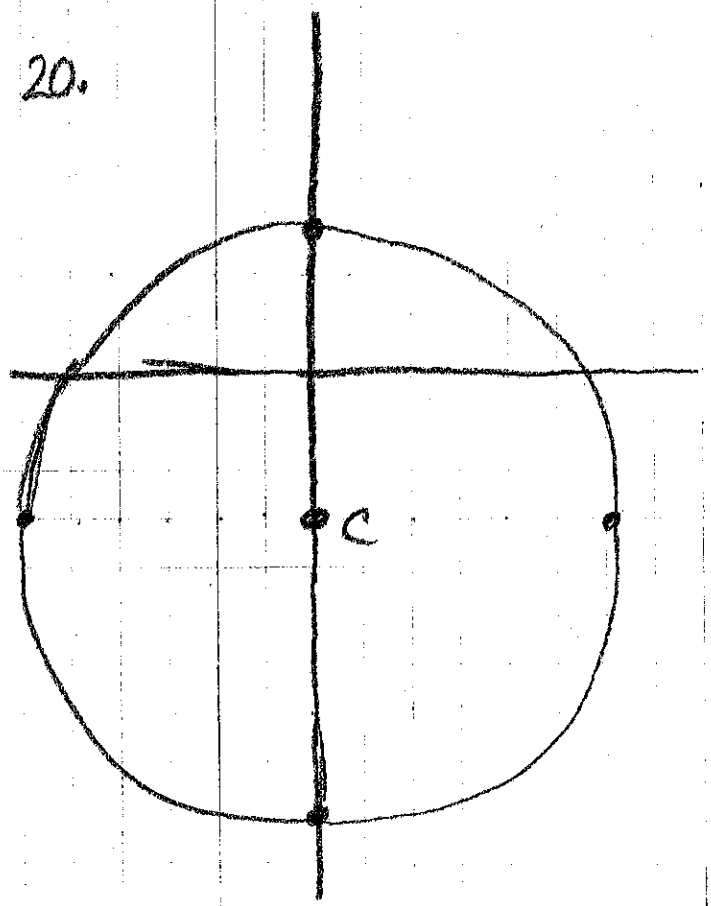
13.



14.



20.



21.